



ERA21FA142

Jupiter, Florida

February 28, 2021

About 1230

Luscombe, 8E, N960K

WRECKAGE/SITE EXAMINATION

Aaron McCarter (NTSB IIC)

Juan Garcia (FAA)

HISTORY OF FLIGHT

On February 28, 2021, at 1230 eastern daylight time, a Luscombe, 8E, N2601T, was substantially damaged when it was involved in an accident near Tailwinds Airport (FD15) Jupiter, Florida. The private pilot sustained fatal injuries and the pilot rated passenger was seriously injured. The airplane was operated as a Title 14 Code of Federal Regulations (CFR) Part 91 personal flight. The pilot/owner and pilot rated passenger (copilot) were father and son. Witnesses reported observing the airplane during takeoff. Their observations of the flight were inconsistent; the engine sounded strong to one witness, but another witness stated that the engine didn't sound right. The takeoff was recorded by a witness, and after takeoff, during initial climb, the left engine cowl was flapping violently in the wind. There was a decrease in engine power level off and descent followed by an increase in engine power and a gradual climb. As the airplane climbed out, the wings were rocking; gusty conditions existed at the time. The airplane entered a shallow left bank then disappeared out of view and impacted trees.



Figure 1 Airplane during takeoff showing open engine cowl.

PERSONNEL INFORMATION

The pilot/owner recently purchased the airplane so his son could get tailwheel time. He owns several airplanes in Florida and Alaska. The pilot has over 3,800 hours total flight time with about 9 hours in the Luscombe. The private pilot rated passenger (copilot) was the son of the pilot/owner. He had just over 250 hours total flight time with about 4 hours in the Luscombe. Both pilot logbooks have been documented.

AIRPLANE INFORMATION

The airplane was manufactured in 1947 and was a Luscombe 8E model with an upgraded Continental C90 engine. the most recent maintenance was performed on January 21, 2021 (Figure 2) when a new carburetor was installed but there was no record of maintenance in the airplane maintenance records. This information was documented in the copilot's (son's) logbook. The last recorded maintenance (Figure 3) was accomplished on September 22, 2021, when a stuck valve was discovered and replaced at 973.67 tach hours.

[illegible]

Figure 2 Pilot Rated Passenger (Son) Logbook record showing installation of new carb.

[illegible]

Figure 3 Last maintenance recorded in Engine Logbook

WRECKAGE AND IMPACT INFORMATION

The airplane impacted dense woods and terrain about 700 feet northeast of the airport on a heading of about 030° from the departure end of runway 09 at an elevation of 20 ft above mean sea level. Figure 4

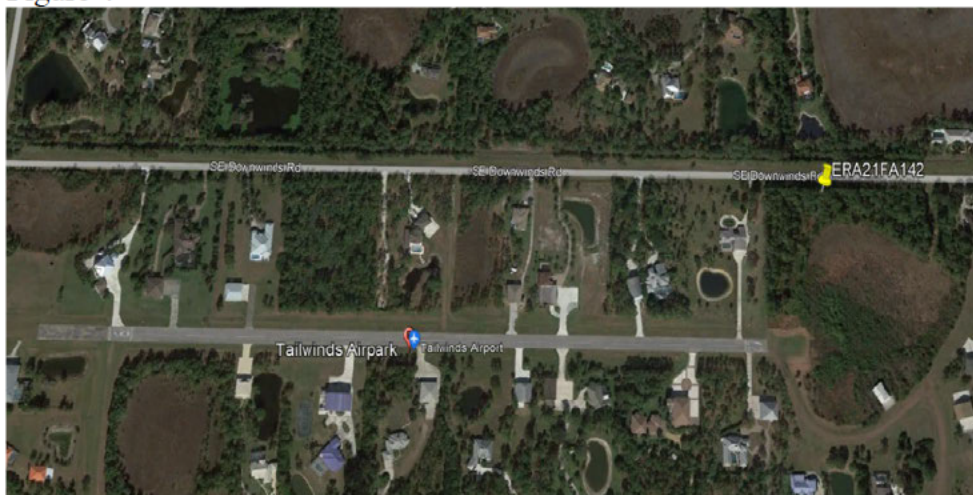


Figure 4 Overhead view of accident site and airport

50 The right wing impacted a tree midspan as indicated by a 16-inch half-moon shape impact mark
51 and subsequently separated from the fuselage at the wing root. The right wing strut sheared off
52 from the wing and the fuselage and was discovered about 75 ft from the wreckage. The airplane
53 came to rest on its right side, with the left wing pointing up in a near vertical 90-degree position
54 (Figure 5) The left wing had outboard leading-edge compression damage. Police, fire rescue
55 reported the strong odor of fuel at the site during their rescue and recovery.



Figure 5 Airplane wreckage

58 The wing was repositioned, and the ground underneath was saturated with fuel.

60 Accident Site Signatures

61 Damage signatures on nearby trees, including several tree branches near the wreckage that have
62 propeller cuts and scalping impact signatures. (Figure 6) There were numerous branches on the
63 ground with fresh breaks leading up to the main wreckage.



Figure 6 Propeller signatures on tree

66 The gascolator was about 1/2 full of fuel (Figure 7) and there was fuel in the lines leading from
67 the fuel tanks into the engine. About 1 gallon of fuel recovered from both tanks. The fuel lines
68 were dripping and the gascolator filled up once the wreckage was repositioned. Fuel had the
69 appearance and smell of aviation fuel (AVGAS); it was light blue, clear, and free of any water or
70 debris.



Figure 7 Gascolator 1/2 full of fuel

72

73 **Engine Cowl**

74 The engine cowl remained attached on the right side and the wing nuts were secured in place.
75 The left side, which had flush mounted screw fasteners (Dzus fasteners.) The cowl was unlatched
76 and there was no damage to the fasteners or receptacle. The cowl was unsecured. There was
77 minor buckling damage to the cowl. Figure 8.



Figure 8 Damaged engine cowl showing fasteners

79

Propeller

The propeller remained attached to the hub; aft bending with a slight s-bend and has diagonal chordwise scrapes on one of the blades.

Control Continuity

Vertical stabilizer, rudder, horizontal stabilator, and trim tab control. Trim was set at 4° nose up. The control surfaces remained attached, and continuity was confirmed. Elevator control cable continuity was established. The right wing aileron control continuity was confirmed; the control cables remained attached to the bell crank that separated from its mount. The control cables sawed through the right wing surface during wing separation and breaks in the cables were consistent with tensile overload. Left wing aileron control continuity was confirmed.

Spark Plugs

The spark plugs have minimal/normal wear. Checked the Champion Check-A-Plug chart. They do display any evidence of carbon or lead fouling. The bottom spark plugs on the right side of the engine were coated in oil due to orientation of the engine after impact. The top right spark plugs sheared off at the electrode. Left and right magnetos are undamaged.

Engine Continuity

Engine thumb compression and suction on all cylinders was confirmed and crankshaft continuity was confirmed after pulling the engine through a full 720 degrees of rotation. All valves, pushrods and springs operated smoothly, and the crankshaft rotation was smooth. There was no noticeable abnormal noise or friction heard or felt.

Lubrication

There are about 4 quarts of oil remaining in the sump. Oil looked fresh; it was slightly black with a tan/copper hue.

Carb and Gascolator

The carburetor and gascolator were undamaged. The carburetor has fuel in the bowl and the floats functioned smoothly and were undamaged. The needle valve and screen are free of obstructions and the action of the valves were smooth. There were no mechanical irregularities or other anomalous behaviors discovered with the carburetor. The carburetor appeared clean and new. Figure 9.

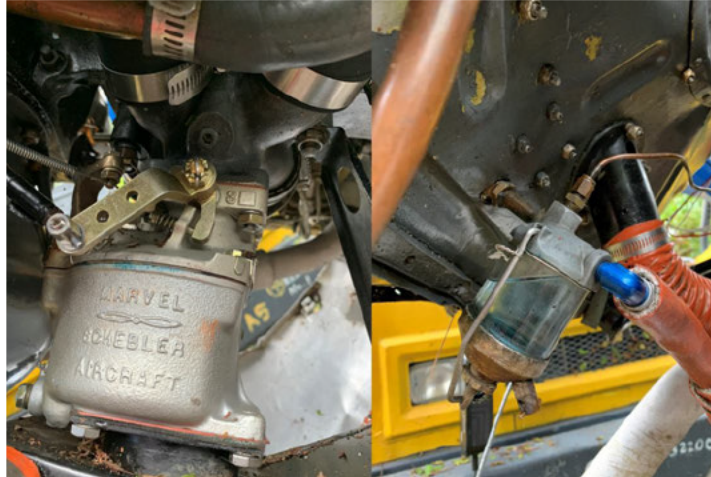


Figure 9 Carburetor and Gascolator side by side view. Carb appears brand new. Gascolator filled back up with fuel once wreckage was up righted.

Engine Operation

New leads were installed on the right magneto and the top spark plugs (damaged during impact) were replaced with serviceable units to facilitate engine start and operation. The propeller was measured and cut about 18 inches out from the central hub; the cuts were made before the bend in the blades equally on both sides to facilitate engine operation and limit vibrations. The mechanic operated the throttle assembly from the engine compartment as the throttle lever in the cockpit was not functional due to impact damage. The engine was successfully started while the IIC was partially inside the cockpit giving hand gestures to the mechanic. The engine was operated from idle to about 75% power briefly for safety reasons. Operated the engine for about 90 seconds with no anomalous behavior observed; the engine and associated components functioned normally. Figure 10.



Figure 10 Engine start and runup screen capture.

131 **Cockpit documentation (Day After Accident)**
132 Primer_ In and Locked
133 Mixture- Full Rich
134 Throttle- 3/4 out (aft) and bent 45 degrees.
135 Fuel Switch on Left Tank
136 Nav Lights-Off
137 Avionics Master-On
138 Magnetos- Off (Fire rescue turned it off from both)
139 Fresh Air-On
140 Landing Lights-Off
141
142 **Instrument Panel (Figure 10)**
143 Oil Pressure and Temp –Unreadable
144 Vertical Speed- Negative 1,100 feet per minute
145 RPM – Zero
146 Fuel – Empty left and right through sight gauge.
147 Knots – Zero
148 Altimeter – 90 ft
149 Altimeter Setting - 30.00
150 AFTT: 973.67
151 Tach Time: 973.67
152



154 *Figure 11 Cockpit instrument panel photograph*

155 **ADDITIONAL INFORMATION**

156 An engine monitor JPI was discovered and will be sent to the lab for download and examination.
157 High quality video was taken by witnesses and will be sent to the lab to conduct a video study.